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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,624	06/27/2003	Richard L. Hilton	200205511-1	8021

22879 7590 03/08/2007
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FORT COLLINS, CO 80527-2400

EXAMINER

TRAN, DENISE

ART UNIT	PAPER NUMBER
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2185

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/607,624

Applicant(s)

HILTON ET AL.

Examiner

Denise Tran

Art Unit

2185

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) 32-51 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23-31 is/are allowed.
- 6) ☒ Claim(s) 1-4, 9-15, 17, 21, 22 and 52 is/are rejected.
- 7) ☒ Claim(s) 5-8, 16 and 18-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 6/27/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-31 and 52, drawn to a method/apparatus measuring values, observing values of a plurality of memory elements and determining the digital state, classified in class 365, subclass 148 and 158.
 - II. Claims 32-43, drawn to a method/ memory for updating the adaptive threshold to include the compared value and its digital state, classified in class 365, subclass 185.24, 184.
 - III. Claims 44-51, drawn to a method/memory encoding data into memory elements and decoding data by comparing the memory elements, classified in class 365, subclass 4.
2. Inventions I, II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination invention I has separate utility such as in a method/system that does not have updating the adaptive threshold to include the compared value and its digital state particulars, encoding data into memory elements and decoding data by comparing the memory

elements particulars of the other inventions. Similarly, each of other subcombinations (i.e., each invention II-III) is separately useable. See MPEP § 806.05(d).

The examiner has required restriction between subcombinations usable together. Where applicant elects a subcombination and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

3. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

4. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Mr. Merrett (Reg. No. 27250) on 1/18/07 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-31 and 52. Affirmation of this election must be made by applicant in replying to this Office action. Claims 32-51 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

7. Claims 1-31 and 52 are presented for examination.

8. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: "a memory, comprising . . . the circuitry observes values of a plurality of memory elements corresponding to digital states, and utilizes the observed values to determine the digital state of at least one memory element," claim 11; "the circuitry includes a comparison device and a register, " claim 14; "the circuitry observes values of a plurality of memory elements corresponding to digital states, and utilizes the values of proximate memory elements to predict the digital state of at least one memory

element, claim 23" claims 6-8, 14-16, and 24-26 have the similar problems as discussed above.

9. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method, comprising . . . calculating a plurality of terms associated with transitions in the values between memory elements, and determining the digital of at least one memory element using the calculations from (b)," claim 1; "the calculations comprise calculating a sum of terms associated with transitions," claim 4; "determining the digital states of memory word by choosing an outcome that minimizes the sum of transition-terms," claim 5; "a memory, comprising . . . the circuitry observes values of a plurality of memory elements corresponding to digital states, and utilizes the observed values to determine the digital state of at least one memory element," claim 11; "the circuitry includes a comparison device and a register, " claim 14; "the circuitry observes values of a plurality of memory elements corresponding to digital states, and utilizes the values of proximate memory elements to predict the digital state of at least one memory element, claim 23" claims 6-8, 14-16, and 24-26 have the similar problems as discussed above, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-4, 9-15, 17, 21-22 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Tran et al., US 6317376 (hereinafter Tran).

Claim 1, Tran teaches a method, comprising the acts of:

(a) measuring values associated with a plurality of memory elements, wherein the values are indicative of a digital state (e.g., col. 3, lines 10-35; col. 6, line 35 to col.7, line 10);

(b) calculating a plurality of terms associated with transitions in the values between memory elements (e.g., col. 4, lines 25-45; col. 6, line 35 to col.7, line 10); and

(c) determining the digital state of at least one memory element using the calculations from (b) (e.g., col. 4, lines 25-45; col. 6, line 35 to col.7, line 10).

Claim 11, Tran teaches a memory, comprising:

a plurality of memory elements (e.g., fig. 1, els. 110, 112, 104);

circuitry coupled to the plurality of memory elements (e. g. ; and

wherein the circuitry observes values of a plurality of memory elements corresponding to digital states (e.g., col. 3, lines 10-35), and utilizes the observed values to determine the digital state of at least one memory element (e.g., col. 4, lines 25-45).

Claim 52, Tran teaches a memory, comprising:

a means for observing values of a plurality of memory elements (e.g., col. 3, lines 10-35); and a means for determining the digital state of at least one memory using measured values of proximate memory elements (e.g., col. 4, lines 25-45).

Claims 2-4, 9-10, 12-15, 17 and 21-22, Tran teaches wherein act (b) comprises calculating the plurality of terms between proximate memory elements (e.g., fig. 3, els. 204; col. 4, lines 25-45; col. 6, line 35 to col.7); wherein the proximate memory elements have observed values that vary due to processing inefficiencies (e.g., abstract); wherein the calculations comprise calculating a sum of terms associated with transitions (e.g., fig. 2, els. 154; col. 4, lines 25-45; col. 6, line 35 to col.7, line 10); wherein the memory elements comprise magnetic memory elements (e.g., abstract); and wherein the

observe values measured in (a) represent resistive values (e.g., col. 3, lines 10-35; col. 6, line 35 to col.7, line 10); wherein the observed values are used to calculate a plurality of transition-terms associated with possible transitions between proximate memory elements (e.g., col. 4, lines 25-45; col. 6, line 35 to col.7, line 10); wherein the circuitry includes a comparison device and a register (e.g., col. 4, lines 25-45; col. 6, line 35 to col.7, line 10); the comparison device compares the contents of the register to determine the digital state of a desired memory element (e.g., col. 4, lines 25-45; col. 6, line 35 to col.7, line 10); wherein the plurality of transition-terms are used to determine the digital state of a memory word (e.g., col. 4, lines 25-45; col. 6, line 35 to col.7, line 10).

12. Claims 5-8, 16, and 18-20 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claims 23-31 are allowable over the prior art of record.

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a) Smith et al. (US 2004/0240255) shows determining digital states;
- b) Baker (US 6687179) shows determining digital states;
- c) Pashmakov (US 6831856) shows determining digital states.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise Tran whose telephone number is 9. The examiner can normally be reached on Monday and Thursday from 8:45 a.m. to 5.15 p.m.. The examiner can also be reached on alternate Friday

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shah Sanjiv, can be reached on 571-272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Denise Tran

3/2/07